

Why we teach Science at Coton Green Primary School

Intent:

At Coton Green Primary School, we passionately believe that science should be inspirational, exciting and investigational. We encourage children to ask and answer questions about the world in order to develop their understanding of the world. We nurture their curiosity and teach essential Working Scientifically skills to make them better informed, deep thinkers and active investigators. By learning about Science through 'hands-on', engaging investigations, children at Coton Green will develop into informed adults, who can use what they know about science to help them make sense of the world. By linking science with other areas of the curriculum, we ensure that our teaching of Science is placed in a 'motivating, real-life context', through which children can also develop and improve skills across the rest of the curriculum, including English and maths.

Through our provision of high quality science teaching and learning, we will ensure that children at Coton Green experience inspiring science that builds their understanding of the value and place of science in their lives. This will lay a foundation for their future studies, enabling them to make well-informed decisions in our increasingly technical world and give them access to a wide range of rewarding careers

Implementation:

Our progressive learning journeys for science are interwoven with cognitive science concepts, which ensures that children are taught the 'right' knowledge sequentially, making explicit links between content where relevant. The planning ensures that children will experience regularly planned opportunities for spaced practice, when key content will be re-taught. It also ensures that children will have frequent opportunities to practice retrieval of key information. The learning journeys set out opportunities for children to apply and practice key content and skills in a variety of contexts, so that they can store knowledge appropriately in their long-term memory. The development of this knowledge-engaged science curriculum, with an emphasis on hands-on learning, detailed exploration opportunities, and chances to apply knowledge and understanding through developing working scientifically skills, will result in children knowing more and remembering more, which aligns seamlessly with the Government's revised National Curriculum, published in 2014.

Key Features of our Curriculum:

The aims of the national curriculum are that all children will develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics. They will also develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them. Children must be equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future. The curriculum is separated into two parts, which must not be taught separately.

The nature, processes and methods of science:

'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group. 'Working scientifically' should be embedded within the content of biology, chemistry and physics, focusing on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions. These types of scientific enquiry should include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Children are expected to seek answers to questions through collecting, analysing and presenting data. 'Working scientifically' will be developed further at secondary school, once children have built up sufficient understanding of science to engage meaningfully in more sophisticated discussions of experimental design and control.

The National Curriculum sets out expectations for teaching and learning of scientific knowledge and understanding and the 'Working Scientifically' skills by key stage and year group. This has been distilled into our Science Learning Journey, which sets out what children are expected to be able to do by the end of each year.

Scientific knowledge and conceptual understanding:

The programmes of study describe a sequence of knowledge and concepts. While it is important that children make progress, it is also vitally important that they develop secure understanding of each key block of knowledge and concepts in order to progress to the next stage. Insecure, superficial understanding will not allow genuine progression: pupils may struggle at key points of transition (such as between primary and secondary school), build up serious misconceptions, and/or have significant difficulties in understanding higher-order content.

Children should be able to describe associated processes and key characteristics in common language, but they should also be familiar with, and use, technical terminology accurately and precisely. They should build up an extended specialist vocabulary. They should also apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data. The social and economic implications of science are important but, generally, they are taught most appropriately within the wider school curriculum: teachers will wish to use different contexts to maximise their pupils' engagement with and motivation to study science.

Impact:

- Children enjoy and are enthusiastic about Science.
- Children are confident to use and explain Scientific vocabulary.
- Children are curious and ask questions about their Science learning and reflect on their knowledge.
- There is a clear progression of children's work and teachers' expectations.
- Children complete pre-assessments to ensure any misconceptions of a topic are addressed.
- Children complete post-assessment questions to assess children's learning.
- Children receive an engaging, high-quality science education that provides them with the foundations for understanding the world, that they can take with them once they complete their primary education.
- Children develop an enquiring mind and can create their own questions that can be investigated.
- Children make predictions, set up tests, observe and measure, record data, interpret and communicate results and evaluate.

Miss L. Stevenson

Science Subject Leader